

## A COVER ASSEMBLY FOR HOSPITAL CARTS

### BACKGROUND OF THE INVENTION

#### Claim of Priority

The present application is based on and a claim to priority is made under 35 U.S.C. Section 119(e) to provisional patent application currently pending in the U.S. Patent and Trademark Office having Serial No. 60/237,493 and a filing date of October 4, 2000.

#### Field of the Invention

This invention relates to a protective cover assembly primarily designed to enclose a mobile delivery cart of the type used for the distribution of a variety of items, at least some of which should be maintained in an at least partially sterile environment, such as items used in hospitals or like medical facilities. The cover assembly includes an enclosure formed of flexible, preferably hyper-allergenic material which, when expanded into an operative position, substantially surrounds and encloses the cart as well as its contents, thereby facilitating the maintenance of the preferred sterile environment.

1           Description of the Related Art

2           Manually powered or propelled carts, hand trucks, bins, and  
3           the like are widely known and used in a variety of both  
4           commercial and domestic applications and typically involve the  
5           temporary storage and transport of a variety of items from one  
6           location to another in the same physical facility. Carts of the  
7           type referred to may take a variety of structural designs and  
8           configurations depending upon their intended use and/or the  
9           items which they are intended to contain. Such structural  
10          variations include carts designed to carry open top bins that  
11          are primarily designed to contain a plurality of loosely stored  
12          items. Examples may include grocery carts and carts used in  
13          hotels that carry a number of bins holding soap bars, containers  
14          of shampoo, etc. More structurally complex carts exist,  
15          however, which include a plurality of shelves, open or closed  
16          compartments and/or segregated areas, and are therefore,  
17          designed to contain a plurality of products or items of the same  
18          kind or class, in at least a minimally segregated manner. The  
19          size of such carts, bins, hand trucks, etc. can also vary from  
20          relatively small push carts, of the type found in grocery stores  
21          and like retail establishments, to much larger carts, which  
22          often times approximate the size of the person propelling the  
23          cart and which are primarily used in industrial or other  
24          commercial environments.

25           One area in which mobile delivery carts are used

extensively is in the medical field, wherein such carts are used to deliver a large variety of items throughout hospitals or other medical and patient care facilities. Such items include, but are not limited to, surgical gowns, scrub apparel, sheets and pillow cases as well as like bedding materials, surgical masks, shoe covers, hair covers, and any of a large variety of other medical products or devices necessary for proper patient care. In the hospital setting especially, it is important that at least some of these products be sterile and totally free of germs. Thus, certain ones of these products are pre-packaged in a hermetically sealed or otherwise sterile wrapping. Still others of these products, however, are not pre-packaged, but should still be maintained in a substantially sterile environment. Preferably, a substantially sterile environment should also be maintained for all of these items as they are transported from a supply station to their respective destinations within a hospital or similar patient care facility. During the distribution and/or delivery process, items of the type set forth above are typically stored on mobile delivery carts as they are transported along a predetermined delivery route within and distributed throughout the physical facilities of the hospital or like institution.

During the time it takes to deliver the variety of items or products contained on such delivery carts, it is desirable to maintain, at least as much as practical, a substantially sterile

1 environment for the storage of such items as they travel along  
2 the aforementioned delivery route. This is particularly true in  
3 hospitals and the like where some germs, bacteria and infectious  
4 diseases may be carried in and transmitted by contact with the  
5 air. In that delivery carts of the type used in hospitals  
6 normally are "open", to the extent that one or more sides of the  
7 cart comprise a plurality of openings to facilitate ready access  
8 to the products being delivered, there is a recognized need for  
9 some type of cover dimensioned and configured to somewhat  
10 protect the delivery cart as well as the contents therein. It  
11 would be beneficial if a cover were developed that could  
12 effectively isolate the contents of the cart and, as much as  
13 possible, to maintain a substantially sterile environment on the  
14 interior thereof, regardless of whether the contents of the cart  
15 are pre-packaged or not. In addition, it would be highly  
16 beneficial if a cover were developed that were adequately  
17 structured or reinforced to the extent of significantly reducing  
18 the possibility that such a cover will be torn or ruptured which  
19 is quite possible as deliveries are made, and which would,  
20 thereby compromise the sterile environment under the cover,  
21 i.e., the interior portions of the cart and its contents. It  
22 would also be highly beneficial if a cover of the type referred  
23 to above were developed that could further aid in the  
24 maintenance of a substantially sterile environment by being  
25 formed of a flexible, strong, hyper-allergenic material which,

in addition, is capable of being selectively oriented in either a collapsed, stored position or an extended, operative position wherein the operative position includes a hollow interior dimensioned to substantially cover the top and exposed sides or faces of the cart. Of course, any such cover should enable a person to easily access the contents of the cart, albeit in somewhat of a restricted manner, so as to reduce exposure of the interior portions of the cart under the cover, as well as its contents to the surrounding environment.

## SUMMARY OF THE INVENTION

The present invention is intended to address these and other needs which remain in the art, and is directed towards a cover assembly of the type designed to overlie and substantially enclose a delivery cart or like structure, such that the cart and the contents thereof are enclosed and protected. The cover assembly of the present invention is made from a flexible, yet relatively strong and substantially protective material and in one embodiment, to be described in greater detailed hereinafter, is made from a hyper-allergenic material so as to maintain an at least partially sterile environment on the interior of the enclosure in which the cart is positioned. The hyper-allergenic material from which the enclosure of the cart assembly of the present invention is formed may be of the type commercially available under the trademark STAPH-CHEK,™ registered in the

1 U.S. Patent and Trademark Office, namely, Reg. No. 802,786, and  
2 manufactured by Herculite Products, Inc., a corporation of New  
3 York with offices in New York City and possibly in Newark, New  
4 Jersey, as well. Naturally, equivalent hyper-allergenic  
5 materials can be utilized and are applicable for forming the  
6 enclosure of the subject cover assembly, particularly when the  
7 delivery cart of the type referred to is used in hospitals or  
8 like medical facilities for the delivery of a plurality of  
9 different products or items, at least some of which are intended  
10 to be maintained in an at least partially sterile environment.  
11 However, it is emphasized that the cover assembly of the present  
12 invention does not have to be formed of a hyper-allergenic  
13 material, as such an embodiment would still be considered to  
14 fall within the spirit and scope of the present invention.

15 As set forth above, in hospitals or other patient care  
16 facilities, a variety of items including but not limited to,  
17 patient gowns, patient bedding, surgical gowns and other scrub  
18 apparel including hair covers, surgical masks, shoe covers, etc.  
19 are all maintained in a sterile condition until such items are  
20 delivered to their point of use, un-packaged and applied as  
21 intended. This is particularly true with surgical gowns or  
22 like surgical and scrub apparel used in operating rooms,  
23 intensive care units, isolation wards, etc. The present  
24 invention facilitates the maintenance of these and other such  
25 medical items or products in an at least partially or

1 substantially sterile environment during their delivery, by  
2 providing a cover assembly comprising an enclosure, which is  
3 dimensioned and configured to substantially surround and enclose  
4 the delivery cart when the enclosure is in its expanded,  
5 operative position.

6 More specifically, the enclosure comprises a top disposed  
7 in overlying relation to an upper portion of the cart and a  
8 sidewall structure secured to the top and depending downwardly  
9 therefrom into overlying, covering relation to the various sides  
10 of the cart and in substantially surrounding relation thereto.

11 The sidewall structure includes at least one access opening  
12 that is structured and disposed to substantially correspond in  
13 dimension and configuration to one side of the cart and/or to an  
14 area of the cart so as to provide access to the contents  
15 thereof. The cover assembly additionally comprises in the  
16 preferred embodiment, a closure structure that is structured for  
17 selective positioning between an open position and a closed  
18 position relative to the access opening, in order that the cart  
19 may be almost entirely covered on the interior of the enclosure,  
20 thereby facilitating the maintenance of the aforementioned,  
21 desired sterile environment. The closure structure preferably  
22 comprises a drape of flexible material connected to the sidewall  
23 structure and, in one embodiment, secured to extend downwardly  
24 from either the top of the enclosure or an upper portion of the  
25 sidewall structure in overlying, covering relation to the access

1 opening and to the area of the cart which is designed to provide  
2 access to the contents thereof. The access opening is  
3 preferably dimensioned to provide access to all of the various  
4 items or contents of the cart by selectively positioning the  
5 closure structure in the open position. Also, as the closure  
6 structure is preferably formed from a flexible material, the  
7 closure structure can be selectively positioned in a partially  
8 open position which allows exposure of only certain portions of  
9 the cart and access sufficient to only one of the contents of  
10 the cart, as required.

11 The cover assembly of the present invention preferably  
12 includes a reinforcement assembly. More specifically, the  
13 reinforcement assembly comprises a plurality of reinforced  
14 portions mounted on various portions of the enclosure. The  
15 reinforced portions are disposed in spaced apart, strategically  
16 located positions on the enclosure so as to provide protection  
17 against physical damage, including tearing or rupture, such as  
18 when the enclosure inadvertently engages wall surfaces, doors,  
19 or the like. The various reinforced portions are also disposed  
20 on the enclosure to prevent similar damage when the enclosure is  
21 being manipulated during mounting on the cart and/or when the  
22 closure structure is being moved to provide access to the  
23 interior of the cart. The reinforced portions may be generally  
24 defined as thickened material portions, ideally comprising  
25 multi-layered structures of material, which provide resistance

1 to physical damage to the enclosure, as set forth above. Such  
2 reinforced portions may include, but are not limited to,  
3 surrounding peripheral seams located at the junction of the top  
4 and sidewall structure of the enclosure, as well as a plurality  
5 of corner pads strategically located so as to reinforce certain  
6 areas of the enclosure of the cover assembly which undergo  
7 stress or unusual forces when the enclosure is positioned in its  
8 operative position.

9 The cover assembly of the present invention preferably also  
10 comprises a storage assembly, including one or more pockets,  
11 located at predetermined positions, ideally located both on the  
12 exterior and interior of the cart and which are specifically  
13 structured for the containment of various items. More  
14 specifically, the storage assembly of the present invention  
15 includes at least a first pocket or compartment disposed within  
16 the hollow interior of the enclosure in a location which is  
17 readily accessible. This first pocket or compartment is also  
18 preferably formed of a hyper-allergenic material, as discussed  
19 above, and is dimensioned and configured to removably contain  
20 predetermined items or specific contents, which are best  
21 maintained in as sterile an environment as possible, during the  
22 delivery procedure. Accordingly, this first pocket or  
23 compartment serves to isolate its contents from the cart, also  
24 disposed on the interior of the enclosure, and from the exterior  
25 of the enclosure until it is delivered to its intended

1 destination. The storage assembly may also include one or more  
2 additional pockets or compartments mounted on the exterior  
3 surface of the sidewall structure which are specifically  
4 structured to removably contain a variety of other products,  
5 items or contents, as desired.

6 These and other features and advantages of the present  
7 invention will become more clear when the drawings, as well as  
8 the detailed description are taken into consideration.  
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11 BRIEF DESCRIPTION OF THE DRAWINGS  
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For a fuller understanding of the nature of the present invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

Figure 1 is a perspective view of a cover assembly according to the present invention disposed in overlying, covering relation to a mobile delivery cart or like structure.

Figure 2 is a detailed view in partial cut away of one portion of the embodiment of Figure 1.

Figure 3 is a detailed view in partial cut away of another portion of the structure of the embodiment of Figure 1.

Figure 4 is a sectional view taken along line 4-4 of Figure 3.

Figure 5 is a perspective view in cut away showing interior

1 portions of a preferred cover assembly according to the present  
2 invention.

3 Figure 6 is a sectional view of along line 6-6 of Figure 3.

4 Figure 7 is a sectional view along line 7-7 of Figure 2.

5 Like reference numerals refer to like parts throughout the  
6 several views of the drawings.

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8 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

9 As shown in the accompanying drawings, the present  
10 invention relates to a cover assembly such as that generally  
11 indicated as 10 in Figure 1. The cover assembly 10 includes an  
12 enclosure generally indicated as 12 comprising a sidewall 14  
13 disposed in substantially surrounding relation so as to form a  
14 hollow interior of the enclosure 12. Further, the enclosure 12  
15 includes a top 16 secured to the sidewall 14 such that the  
16 sidewall 14 extends in a downwardly depending relation to the  
17 top 16. The sidewall 14 may include a plurality of individual  
18 panels or sides or alternatively, may include a continuous  
19 structure of sufficient dimension to overly and cover  
20 substantially the entire outer portion or plurality of sides of  
21 a mobile cart generally indicated as 20.

22 The enclosure 12 is preferably formed from a flexible and  
23 yet high strength protective material, which is ideally also  
24 waterproof, that is capable of being selectively disposed in  
25 either a collapsed, substantially folded position (not shown) or

1 an outwardly expanded, operative position as shown in Figure 1.  
2 When in the operative position of Figure 1, the enclosure 12  
3 includes a hollow interior that is preferably dimensioned and  
4 configured to receive and entirely enclose the mobile cart 20.  
5 In order to facilitate movement or travel of the cart 20, the  
6 bottom of the enclosure 12, more specifically defined by the  
7 bottom peripheral edge of the sidewall 14, remains open as at  
8 18, so as to allow the wheel or castor assembly 22 secured to a  
9 base 20 of the cart to pass therethrough into movable supported  
10 engagement with the floor or like surface over which the cart  
11 travels.

12 The enclosure 12 of the cover assembly 10 further includes  
13 at least one access opening 26 formed in the sidewall 14 and  
14 disposed in overlying, accessible relation to the hollow  
15 interior of the enclosure 12. Preferably, the cover assembly  
16 includes only one access opening disposed in corresponding  
17 alignment with at least one side of the cart 20. More  
18 specifically, the access opening 26 is ideally dimensioned and  
19 configured to be substantially equivalent or at least to  
20 correspond to the dimension and configuration of one side of the  
21 cart 20, as shown in Figure 1, which facilitates access to  
22 various portions of the cart 20, such as compartments or shelves  
23 21, 23, 25 etc., as well as the contents therein. It should be  
24 noted that the size and overall configuration of the access  
25 opening 26 may vary dependent on the size and configuration of

1       the cart 20, and more particularly, on the arrangement or  
2       disposition of the various compartments 21, 23, 25, etc. and/or  
3       other facilities included on the cart 20 and utilized to store  
4       and transport the various items or contents thereof.

5                  As set forth above, one feature of the present invention is  
6       the at least partial isolation of the hollow interior of the  
7       enclosure 12 in order maintain a substantially sterile  
8       environment therein for the various items or contents separately  
9       stored on cart 20 as they are being delivered. Therefore, the  
10      cover assembly 10 of the present invention includes a closure  
11      structure, generally indicated as 30, preferably in the form of  
12      a flexible material drape 32, which may have a variety of  
13      configurations but which is specifically dimensioned and  
14      configured to be selectively disposed in covering relation to  
15      the access opening 26. Preferably, the drape 32 is secured by  
16      a connecting seam or junction 34 to the top 16 or to the  
17      sidewall 14 and hangs downwardly therefrom into removably  
18      covering relation to the access opening 26. In addition, due at  
19      least in part to the flexible material from which the drape 32  
20      is formed, it may be easily positioned between a completely  
21      closed position, defined by an overlying relation to an exposed  
22      face or portion of the cart 20, or a partially open positioned  
23      as depicted in Figure 1. Therefore, an advantage of utilizing  
24      a drape 32 as the closure structure is that only a portion of  
25      the hollow interior within the enclosure 12 may be exposed for

1 removal or insertion of various items or contents from or into  
2 the cart 20, as required. It is, of course, to be noted that  
3 the drape 32 may be selectively positioned into an entirely open  
4 position in order to expose the entire, correspondingly  
5 positioned face or side of the cart 20, such as when the cart is  
6 being initially loaded for delivery or distribution of a  
7 plurality of different items.

8 In order to maintain the closure structure, such as drape  
9 32, in a closed overlying position relative to the  
10 correspondingly disposed face or side of the cart 20, the cover  
11 assembly 10 preferably also comprises a connecting means. As  
12 shown in Figure 2 the connecting means can include a plurality  
13 of spaced apart connectors 34 and 34' respectively secured to  
14 and along a peripheral edge of the sidewall 14 in immediately  
15 adjacent or contiguous relation to the periphery of the access  
16 opening 26, as well as on a correspondingly positioned  
17 peripheral edge or portion on the interior surface 32' of the  
18 drape 32. Such cooperative connector portions 34 and 34' may  
19 assume a variety of different structures including, but not  
20 limited to, hook and loop type fasteners, (i.e. Velcro™) snaps,  
21 zippers, etc.

22 The closure assembly 10 of the present invention preferably  
23 also comprises a reinforcing assembly, which may be, but does  
24 not have to be, mounted both on the exterior and interior  
25 surfaces of the enclosure 12. The purpose of the reinforcing

assembly is to provide protection against physical damage to various parts of the enclosure 12; such as when it inadvertently engages a wall, door, becomes entangled with another object, surface, etc. as the cart and closure assembly 10 travel along the intended delivery or distribution route. The reinforcing assembly includes a plurality of reinforced portions such as, but not limited to, corner pads 40 formed on the top 16. The corner pads 40 serve to protect the enclosure against stress or forces exerted on the cover assembly 10 in a downward direction as the top 16 is disposed in overlying, covering and at least partially engaging relation to an upper portion of the cart 20. For example, the corner pads 40 may be positioned on the top 16 so as to overly the corners of a support frame of the cart, which serve to support the enclosure 12 in the intended overlying, surrounding relation to the cart. The reinforcement assembly may comprise alternatively of in addition, a plurality of reinforced portions 42 disposed at each of the corners of the enclosures such as at the lower end of the drape 32 so as to provide reinforcing protection as well as serve as additional "weights", due to their structure. The additional weight facilitates the downwardly depending orientation of the preferred drape 32 in its intended position over the corresponding face of the cart 20 and into its closed position in covering relation to the access opening 26. As shown in Figure 2, the reinforced portions 42 are preferably mounted on

1       the interior surface 32' of the drape 32 adjacent certain ones  
2       of the connector components 34'. The provision of the  
3       reinforced portions 42 further serve to add protection against  
4       the pulling force exerted on the drape as it is disconnected  
5       from correspondingly positioned connector members or components  
6       34 mounted on the exterior of the sidewall 14, as shown in  
7       Figure 1 and discussed above. Correspondingly positioned  
8       reinforced portions 44 may also be mounted on the interior or  
9       exterior surface at the lower end of the exposed face of the  
10      sidewall 14' in which the access opening 26 is formed. These  
11      correspondingly positioned reinforced portions 44 are also  
12      provided to resist the pulling forces exerted on the sidewall  
13      segment 14', as the drape 30 is pulled into its open or at least  
14      partially open position as represented in Figure 1.

15       The reinforcing assembly further includes a "bumper" type  
16      structure which may be in the form of an enlarged peripheral  
17      seam 48 secured to the top 16 but more specifically disposed in  
18      adjacent or contiguous relation to the junction of the top 16  
19      and the sidewall 14. As best shown in Figure 1, the protective  
20      peripheral seam 48 extends substantially continuously about the  
21      periphery of the top 16 at its junction with the sidewalls 14  
22      and 14' and is dimensioned to extend at least partially outward  
23      from the exterior surface of both the top 16 and top regions of  
24      sidewall 14, 14' so as to protectably engage wall surfaces,  
25      doors, or any other object or surface with which the enclosure

1       12, when mounted on the cart 20 in its operative position, may  
2       engage during travel and/or storage of the cart 20.

3             With reference to Figures 2 through 4, 6 and 7, each of the  
4       reinforced portions, including the peripheral seam 48 as well as  
5       the other reinforced portions 40 and 42, are primarily defined  
6       by a thickened material portion, comprising at least one  
7       additional layer of material being affixed in overlying relation  
8       to a layer of material defining the corresponding portion of the  
9       enclosure 12. For example, in the sectional views of Figures 6  
10      and 7, one of the corner pads 40 is defined by a thickened  
11      material portion including a layer of material representing the  
12      corner pads 40 it-self, disposed in secured relation over (or  
13      under) the layer of material defining the top 16. Similarly in  
14      Figure 7, the reinforced portion 42 is preferably disposed in  
15      fixed relation over the interior surface 32' of the drape 32  
16      immediately adjacent to certain ones of the connector components  
17      34'.

18             The cover assembly 10 of the present invention preferably  
19      also comprises a storage assembly. The storage assembly  
20      includes at least a first compartment, generally indicated as 50  
21      in Figure 5, preferably secured to an interior surface 14" of a  
22      portion of the sidewall and therefore disposed within the hollow  
23      interior of the enclosure 12. The first compartment or pocket  
24      50 may include a cover, as at 52, and an outer side or wall  
25      portion 54 overlying and surrounding an interior of the pocket

1 or compartment 50 (not shown). This first pocket 50 is disposed  
2 within the hollow interior of the enclosure 12 so as to maintain  
3 specialized or predetermined garments or items in a completely  
4 isolated location, and therefore more thoroughly sterile  
5 environment, relative to the remainder of the interior of the  
6 enclosure 12 and particularly, in isolated relation to the cart  
7 20 and the contents thereof. Further, the storage assembly of  
8 the present invention may include at least a second compartment  
9 or pocket 56 mounted on the exterior surface of the sidewall 14  
10 and including a window as at 58 being either open or formed at  
11 least in part from a transparent material which allows viewing  
12 of the content maintained on the interior of the second pocket  
13 56. Accordingly, documentation including, but not limited to,  
14 the intended delivery route or plurality of distribution  
15 locations of the contents of the cart for a particular day, etc.  
16 may be disposed within the interior of the second pocket 56,  
17 such that the informative indicia on the documentation can be  
18 read through the window 58. The storage assembly may further  
19 include a third pocket or compartment 60, also mounted on the  
20 exterior of the sidewall 14 and being of sufficient dimension  
21 and configuration to hold used or rejected items on the interior  
22 thereof for delivery back to the proper site for cleaning or  
23 disposal.

24 Since many modifications, variations and changes in detail  
25 can be made to the described preferred embodiment of the

1 invention, it is intended that all matters in the foregoing  
2 description and shown in the accompanying drawings be  
3 interpreted as illustrative and not in a limiting sense. Thus,  
4 the scope of the invention should be determined by the appended  
5 claims and their legal equivalents.

6 Now that the invention has been described,

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